PUBLIC WORKS

INDEX

VOLUME L

JANUARY TO JUNE

1921

MUNICIPAL JOURNAL AND ENGINEER
(INCORPORATED)
243 WEST 39th STREET
NEW YORK

PUBLIC WORKS

INDEX

VOLUME 50

JANUARY—JUNE

1921

General Index

Adversity, Water Works Benefit by.525
Aggregate, Belt Conveyors for.....277
Aid for British Roads, Government. 30
, Types of Roads Receiving Federal 428
Alabama s Highway Bond Election Illegal 243
Highway Bonds 102, 137
Alkali upon Concrete, Effect of.....390
Anti-Strike Action, Promising.....241
Appraisal of Water Works Properties. 480
Appropriation Postponed, Federal Aid 245
Arch Centers Be Supported, How Can.531
Argentine Republic, Good Roads in..238
Asphalt Plant, Manhattan Borough.. 21
Assessments in Newton, Sewer.....187
Atlanta Votes $8,850,000 Improvement Bonds 256
Atlantic City's High-Pressure Fire System 4
Baltimore Municipal Construction, $51,000 000 Provided for 350
Waster Disposal Report.....493
Base and Sub-Base Failures—Table.307
and Sub-Grade Failures 130
for Granite B ocks, Non-rigid...359
Bases, Flexible Pavement 93
for Pavements, Non-Rigid...111, 348
, Pavement 136
Bayonne Desires New Water Supply.265
Benefit by Adversity, Water Works.525
Bethlehem, Viaduct for 30
Bids High, Road 243
in Gary, Pavement.....324
Received, More Paving..... 59
Bill, National Federation of Construction Industries Opposes Johnson Immigration 153
, $250,000,000 Public Works 411
Blasting a Ditch in Gravel..... 8
Down Trees 288
Blocks, Non-Rigid Base for Granite.359
Boilers, Effect of Cleaning.....143
Bonds, A abama's Highway.....102, 137
, Atlanta Votes $8,850,000 Improvement 256
by Misrepresentation, Obtaining..408
, Municipal 149
, Texas County Road.....176
Boston Needs More Water.....198
, Snow Removal in 174
Boulevard, Building the Du Pont....191
Boundaries, Municipal Utilities and Political 193
Bridge Construction Concrete.....541
Bridge Construction, Highway.....393
Erection, Novel Concrete.....446
Substructure Repairs, Tempe....523
Superstructure Is Classified as Hand Rail Concrete, How Much of 227
, The Georgetown 203, 221, 238
Work, Fantastic 451
Bridges, Short-Span Highway...313, 350
Brindel' Convicted 179
British Roads, Government Aid for.. 30
Bronx Borough, New York, Laying Reinforced Concrete Sewers in.403
Brooklyn, Avenue U Sewers..... 73
Budgets, Construction 282
Buffalo City and County Hog Farm for 208
, Filtration Plant Recommended for 264
Buffalo's Improved Water Supply.... 59
Builders' and Contractors' Get-Together Club Be Organized and Financed?, How Can a.....151, 175
Building Industry, Trade Schools Necessary for the.....198
Investigation 57
Operations, Many 523
Permits and Contracts in 1920..192
with Foundations on Wet Sand be Underpinned?, How Can a Brick 415
Zones, Changes in New York's.. 92
Burned by Water Friction, Hose.... 76

Cal in Portland Cement, Effect of..278
California, Highway Shade Trees in.187
Roads, Federal Report on.....324
Canal Proposed, Another Isthmian..100
Care of Concrete Mixers, The.....437
Cast Iron Pipe, Modern..... 75
Cement and Water to a Concrete Mixer, Delivering.....509
, Effect of Cal in Portland.....278
Plants, for State-Owned 73
Census Figures, Some 1920..... 33
in Pennsylvania, Road Traffic....194
Centers Be Supported, How Can Arch.539
Certainties, Construction 501
Chicago, Mechanical Snow Loading in 165
, Street Paving in 194
, Street Work in.....148
Chicago's Paving Program.....205
Cincinnati, Street Cleaning in.....504
Cities, Finances of 265
, Paving in American.....282
City and County, Snow Fighting in.. 31
Pavements to Be Laid in 1921..283
Planning for Kansas City..... 95
Streets and Highway Pavements.135
Streets, Removing Snow from... 37
Classification, Special Mud Excavation 305
Cleaning Boilers, Effect of.....143
in St. Paul, Street..... 11
Cleveland's Submerged Sewage Outfalls 188
Club Be Organized and Financed?, How Can a Builders' and Contractors' Get-Together ...151, 175
Cofferdams, Drag-Line 372
Collection in England, Refuse..... 97
Records, Refuse 375
Colorado River, Power from..... 30
Columbus to Enlarge Filtration Plant 300
Commission, Economy by Kansas Highway 536
Commission Retires Its Consulting Engineers, Vehicular Tunnel..408
, The Indiana Highway.....238
Computing Parabolic Curves for Street Grades 373
Concrete a 2 in 1 Slope with a Slab Lining Having Few Joints, How to 287
, Coarse Sand in Road.....150
, Effect of Alkali upon.....390
, Effects of Organic Impurities on 425
, How Much of Bridge Superstructure Is Classified as Hand Rail 227
in Sea Water 374
Injured in Transit, Pavement...473
Job Mechanical, A 5, 26
Pavements, Reinforcing 137
Pavements ,Reinforcing 137
Sheet Piles Be Installed?, How Can 41
Tests on Earth 554
Concreting a Highway in Cold Weather. Result of 426
, Rapid Road 67
Records, Good 219
Conservatism Desirable, Federal Business 375
Conspiracies, Fighting Construction. 81
Construction Budgets 282
Careers, Government 207
Certainties 501
Company's Encouraging Opinion, A Bid 81
, Concrete Bridge 541
Conditions Improving 526
Conspiracies, Fighting 31
Contract, Fixed Fee Form of Building 174
Contracts, Form of 344
Data, Unusual Engineering 343
, Day Labor Highway 208
, Difficult Swamp Road Construction 49
, Economical Plant on Concrete Road 171
Equipment During the Winter?, What Disposition is Best for.. 82
, Federal Aid Highway.....408
, Highway Bridge 393
in Kokomo, Ind., Sewer..... 89
in Ohio, Road 548
in South Chicago, Concrete Highway 523
in 1920 and 1921..... 81
Industries Opposes Johnson Immigration Bill, National Federation of 153
Lectures, Special Engineering...500
Methods and Equipment, Flexibility of 223
Methods and Plant, Field.....551
Methods, Important Development of 193
Methods, Modifying 169
, North Carolina Highway..... 60
Operations, Obstacles to..58, 81, 171
Organization Be Utilized During Winter Shut-Down?, How Can a General 103
Outlook, Building 397
Prices Are High, Why Highway.396
, Traffic Justification for Highway 396
?, What Are the Advantages, Disadvantages and Uses of Limestone in Highway.....360
, $51,000,000 Provided for Baltimore Municipal 350
Consumers, Educating Water Works.258
Contract, A Workable Form of.....361
, Elements of an Attractive..... 31
, Fixed Fee Form of Building Construction 174
Forms, A Choice of 347
, Installation for a $700,000 Concrete Road 144
, New Forms of 9
No. 26, Delaware State Road....344
Contractors, Engineers and 362
Contractors' Get-Together Club Be Organized and Financed?, How Can a Builders' and.....175, 151
Contracts, Cost-Plus 80
, Forms of Construction.....344
Held Up, Ohio State Road 166
in 1920, Building Permits and....192
Let, Pennsylvania Highway.....378
, What Are the Essentials of Cost Keeping on 382
Control by Small Dams, Flood..... 51
Convention, American Water Works, 527, 546
Conveyors for Aggregate, Belt.....277
Copper Sulphate in Kansas City Reservoir, Use of 260
Cost Keeping on Contracts, What Are the Essentials of.....382
of Road Grading in Nebraska, Low 518
of Tunnel Rock Excavation, The. 13
Cost-Plus Contracts 80
Costs, Distributing Road Construction 323
in Oregon, Increased Highway..327
on Montana Roads, Engineering.320
, Some Recent Highway.....252
Council on Standardization.....552
Counties, Paving Materials in Various 458, 505, 534
Country Roads, Snow Removal from 60
, Snow Fighting in City and.... 31
Court Powerless to Compel Sewerage.405
Cracks in Concrete Pavements Near Culverts, Preventing 326
Creates Park to Save Tree..... 34
Culvert for Park, Rustic.....447
Culverts, Preventing Cracks in Concrete Pavements Near.....326

Curves for Street Grades, Computing Parabolic 373
Cushions for Block Pavements, Mortar 525

Dam, Completing Germantown....183
Proposed in the West, Two Large 208
Dams, Flood Control by Small.... 51
Data, Importance of Run-Off....479
of Fine Screen and Imhoff Tanks, Operating 370
on Rates, Finances and Labor, Tabulated 480
, Our Tabulated Pavement....137
, Unusual Engineering Construction 343
Delaware Highway Designs and Specifications 261
State Road Contract No. 26....344
Delivering Cement and Water to a Concrete Mixer 509
Department, South Carolina Highway 335
Uses Machinery, Water 522
Design, Important Features of Highway 499
Designing Roads, Economy in....499
Designs and Specifications, Delaware Highway 261
Destroys Concrete Roads, Sugar Beet Sap 509
Deterioration of Water Plants, War..379
Dinner, Sanitary Engineers' 102
Disposal at Middletown, Garbage...222
at Worcester, Mass., Sewage....421
in Passaic, Refuse 367
, Liability of Municipality for Nuisance in Garbage 354
of Municipal Refuse 282
, Toledo's Garbage 263
Disposition is Best for Construction Equipment Durin gthe Winter?, What 82
Distinction, A Notable Engineering..150
Ditch in Gravel, Blasting a.... 8
Dorr System, Treating Sewage by the 52
Drainage in Port Arthur 172
of Highways, Location, Grading and 325
, Road Improvement and, Tables.327
Structures in Giles County, Road 345
Dredging Started, Port Newark....554
Duluth Water and Light Notes....276
Duluth's Water Scare 29
Du Pont Boulevard, Building the...191

Earthcrete Road 431
Economy by Kansas Highway Commission 536
Economy in Designing Roads....499
Efficiency, Determination of Pump.. 56
, Increasing Labor 9
Means Profit on Small Jobs....376
El Paso Irrigation Project.... 64
Employees, Equitable Pay for Federal 411
Engine Pumps Public Water Supply Fire 449
Engineering Distinction, A Notable..150
Society, A Russian-American....102
Engineers and Contractors....362
for Public Positions 429
, Vehicular Tunnel Commission Retires Its Consulting....408
Wanted for California Bureau of Architecture 502
Wanted for Reclamation Service.376
Engineers' Dinner, Sanitary 102
England, Refuse Collection in.... 97
English Sewage Treatment, Notes on 24
Equipment During the Winter?, What Disposition Is Best for Construction 82
, Flexibility of Construction Methods and 223
Europe, Civic Tour of 256
, Water Works Notes in.... 51
Excavated and Loaded in Trucks?, How Can Beach Sand Be Most Economically 211
Excavation Classification, Special Mud 305
, The Cost of Tunnel Rock.... 13
Expenditure, Graphical Illustration of Municipal 78
Extermination Along Highways, Mosquito 347
Extortioners, A Good Beginning on.169

Failures, Base and Sub-Base, Tables.307
, Base and Sub-Grade 130
Farm for Buffalo, City and County Hog 208
Fastenings, Wire Rope 64
Federal Aid Appropriation Postponed.245
Fees, Automobile 323
Fighting in City and Country, Snow 31
Filter, A Home-Made Feed-Water..450
?, How Can a Small Quantity of Fine Sand Be Graded for Use in a 244
Filters for Small Sewage Plants, Sand 275
, Operating the St. Louis 10
Filtration Plant, Columbus to Enlarge 300
Plant, Financing Sacramento's.. 72
Plant Recommended for Buffalo.264
Plants, Ineffectively Operated...479
, Water 296
Finances and Labor, Tabulated Data on Rates, ...480
—Labor, Meter Rates—Table....481
of Cities 265
Financing Sacramento's Filtration Plant 72
Fire System, Atlantic City's High-Pressure 4
Flood Control by Small Dams 51
Florida State Highways 449
Flumes, Durability of Metal Irrigation 77
, Protecting Metal 148
Form Economy for Concrete Reservoirs 395
of Contract, A Workable 361
Forms, A Choice of Contract....347
of Contract, New 9
Foundations, Advantages of Bituminous Concrete 279
Friction, Hose Burned by Water.... 76

Galveston's Sea Wall 63
Garbage Collection in Trenton N. J., Package 428
Disposal at Middletown....222
Disposal, Toledo's 263
Gary, Pavement Bids in 324
Georgetown Bridge, The....203, 221, 238
Germantown Dam, Completing....183
Goldsboro Street Paving in....118
Government Aid for British Roads.. 30
Construction Careers 207
Threatened, Scientific Research by Federal 8
Graded for Use in a Filter?, How Can a Small Quantity of Fine Sand Be 244
Grades, Computing Parabolic Curves for Street 373
Grading and Drainage of Highways, Location, ...325
in Nebraska, Low Cost of Road..518
Road with Tractors and Wheel Scrapers 406
Gravel, Blasting a Ditch in.... 8
from Car to Concrete Mixer?, What Are the Best Methods of Handling 435, 456
Plant, A Traveling 92

Handling Gravel from Car to Concrete Mixer?, What Are the Best Methods of 435, 456
Harbor, New Orleans Inner....446
Highway Bonds, Alabama's 102, 137
Bridges, Short-Span 313, 350
Building Annually 5 000 Miles of American 502
Commission, North Carolina's....268
Commission, Economy by Kansas.536
Commission, The Indiana 238
Completed, A 117-Mile Section of Concrete 40
Construction, Day Labor 208
Construction, Federal Aid....408
Construction in South Chicago, Concrete 523
Construction, North Carolina.... 60
Construction Prices Are High, Why 396
Construction, Traffic Justification for 398
Construction?, What Are the Advantages, Disadvantages and Uses of Limestone in....360
Contracts Let, Pennsylvania 378
Costs in Oregon, Increased....327
Costs, Some Recent 252
Department, South Carolina....335
Design, Important Features of...499
Designs and Specification, Delaware 261
, Duplex Concrete 536
, Ideal Section of Lincoln 171
in Cold Weather, Result of Concreting a 426
in Illinois, Constructing a Brick.426
Notes, Oregon State 377
Payements, City Streets and....135
Prices, Recent 397
Problem, Practical Solution of a.324
Specifications, Improved 301
Specifications, State 348
Supervision, A Costly Protest Against Inefficient 257
, Surfacing on Lincoln 265
Testing Department Oregon....446
, The Illinois Experimental..115, 166
, The Mount Pleasant 206
Traffic 237
Work, Pennsylvania 457
Work, Specifications for Massachusetts State 176
Highways, Extension of New York State 102
, Florida State 449
, Lighting 322
, Location, Grading and Drainage of 325
, Wisconsin State 12
Hog Farm for Buffalo, City and County 208
Honored by the Chinese Government, Dr. Waddell 348
Hose Burned by Water Friction..... 76
Hydro-Electric Plant, Skagit River.219
Illegal, Alabama's Highway Bond Election 243
Illinois, Constructing a Brick Highway in 426
Experimental Highway, The..115, 166
Federal Aid Roads 162
Illustration of Municipal Expenditure, Graphical 78
Immigrants Needed, More 32
Immigration Bill, National Federation of Construction Industries
Maximum 526
Opposes Johnson 153
Legislation, Undesirable 397
Notes 15, 43, 155
Improvement and Drainage, Road—Tables 327
Bonds, Atlanta Votes $8,850,000..256
for Washington, D. C., Water...518
, Kansas City's Water Supply.... 76
Improvements in Toledo's Sewerage Designing 518, 541
Improvements in Trenton Water Purification 341
Impurities on Concrete, Effects of Organic 425
Increases, How Water Works Met Cost 530
Indiana Concrete Road Specifications.148
Highway Commission, The....238
Road Law, Amending....205
Roads, Patrol Maintenance for..208
Indictments Expected, 500 153
Injunction, Passaic Valley Sewer 208, 264
Injured in Transit, Pavement Concrete 473
Installed?, How Can Concrete Sheet Piles Be? 41
How Can Submerged Pipes Be.. 65
Insurance Strike 242
Intake, Boosting a Water Works....410
Investigation, Building 57
Iowa, Complete Road Plant in....317
Irrigation Flumes, Durability of Metal 77
Project, El Paso 64
Project for Manila 104
Isthmian Canal Proposed, Another..100

Japan, Bituminous Paving for....411
Jersey City, Improved Heavy Traffic Pavements in 423
Job Mechanical, A Concrete....5, 26
Justification for Highway Construction, Traffic 396

Kansas City, City Planning for.... 95
City Reservoir, Use of Copper Sulphate in 260
City Water Supply 252
City's Water Supply Improvement 76
, Farmers Oppose Good Roads in.174
Highway Commission, Economy by 536
Kokomo, Ind., Sewer Construction in 89

Labor Conditions—Table 309
Efficiency, Increasing 9
for Public Works 121
in the United States, Unskilled..122
in 1921 135
, Meter Rates—Finances—Table .481
Notes 83
Situation, The 303
, Tabulated Data on Rates, Finances and 480
Lancaster's Water Main, Break in...143
Law, Amending Indiana Road....205
Lectures, Special Engineering Construction 500
Legislation, Undesirable Immigration 397
Lexington, Sewage Treatment at.249, 348
Liability of Municipality for Nuisance in Garbage Disposal....354
Light Notes, Duluth Water and....276
Lighting Highways 322
Limestone in Highway Construction?, What Are the Advantages, Disadvantages and Uses of 360
Lincoln Highway, Ideal Section of..171
Linden Street Sewer Tunnel....254
Lining a 20-Foot Well, 50 Feet Deep.507
, Advantages of Pre-Cast Tunnel.257
Having Few Joints, How to Concrete a 2 in 1 Slope with a Slab.287
Loaded in Trucks?, How Can Beach Sand Be Most Economically Excavated and 211
Location, Grading and Drainage of Highways 325
London Boroughs, Refuse Disposal in 503
Lumber Sales Large Increase of....194
Macadam by the Cold Patch Method, Repairing Bituminous 533

382212

Machine, Lowering Water Main with Trenching 253
Machinery, Water Department Uses..522
Macon, Patching Concrete Pavements in 379
Main, Break in Lancaster's Water...143
with Trenching Machine, Lowering Water 253
Mains, Duplicate Supply 427
in Service, How to Move Pipe...555
Maintenance for Indiana Roads, Patrol 208
in New York, Gang vs. Patrol...343
in Springfield, Water 500
Modern Road Building and....359
Urged by the President, Road...347
Manhattan Borough Asphalt Plant.. 21
Manholes, Payment for Sewer.....105
Manila, Irrigation Project for.....104
Masonry Structures 362
Massachusetts Roads, Reinforced Concrete for 263
State Highway Work, Specifications for 176
Materials in Various Counties, Paving 458, 505, 534
, State Manufacture of Road.....137
Measuring the Level of Liquids, Outfit for 478
Mechanical, A Concrete Job.....5, 26
Medal for Third Time, Dr. Waddell Received Norman 150
Meter Maintenance, Water 200
Methods and Equipment, Flexibility of Construction 223
Middletown, Garbage Disposal at....222
Milwaukee Water Works 173
Mixer, Delivering Cement and Water to a Concrete for Jap Tunnel, Pneumatic Concrete 452
Mixers from Central Storage Plants, Serving Concrete Paving.....454
, The Care of Concrete 437

Montana Roads, Engineering Costs on 320
Mosquito Extermination Along Highways 347
Move Pipe Mains in Service, How to 555
Mount Pleasant Highway, The.....206
Municipal Bonds 149
Development of Hydro-Electric Power 194
Expenditure, Graphical Illustration of 78
Street Cleaning, Philadelphia Begins 77
Utilities and Political Boundaries 193
Waste of Water.....480

Nebraska, Low Cost of Road Grading in 518
Newark, N. J., Repairing a Wood Block Pavement in 515

New Bedford Water Works Notes..394
New England Road Builders Ask Relief 224
Road Builders' Association 102
New Hampshire Gravel Roads in....448
New Jersey State Road, Heavy Work on a 443
Water Problem, Solving A..... 29
New London, Water Revenues in.....524
New Orleans Inner Harbor.....446
Newton, Sewer Assessments in.....187
New York City Transit.....279
City's Preparations for Snow Removal 95
, Development of the Port of.... 91
Dry Dock Corporation's Plant...163
, Gang vs. Patrol Maintenance in.343
Harbor Dry Dock Corporation's Plant 141
Loses Passaic Valley Suit 430
State Highways, Extension to..102
Transportation Lines, Alarming Deterioration of 192
New York's Building Zones, Changes in 92
Water Supply, World's Largest Tunnel for 465, 496
North Carolina's Highway Commission 268
North Carolina Highway Construction 60
Notes, Oregon State Highway.....377
Nuisance in Garbage Disposal, Liability of Municipality for.....354

Obstacles to Construction Operations 58
Ohio, Road Construction in.....548
Ohio State Road Contracts Held Up..166
Oil Out of Sewers, To Keep.....437
Operating a True Siphon.....475
Operations, Obstacles to Building... 58
, Obstacles to Construction..... 81
Opinion, A Big Construction Company's Encouraging 81
Oregon Highway Testing Department 446
, Increased Highway Costs in...327
State Highway Notes 377
Outfit for Measuring the Level of Liquids 478
Outlook, Building Construction.....397
Overlooked, Points 57

Park to Save Tree, Creates..... 34
Partnership in Water Supply, Municipal 256
Passaic, Refuse Disposal in.....367
Valley Sewer Injunction....208, 264
Valley Suit, New York Loses....430
Patching Concrete Pavements in Macon 379
Pavement Bases 136
Bases, Flexible 93
Bids in Gary 324
Data, Our Tabulated 137
Per Day, Laying 2,210 Square Feet of 524
Laid During 1920, Table.195, 209, 225
in Newark, N. J., Repairing a Wood Block 515
, Pre-Cast Concrete Slab.....319
, Reinforcing Concrete 119
Specifications of the A. S. M. I.... 95
Pavements, City Streets and Highway 135
in Jersey City, Improved Heavy Traffic 423
in Macon, Patching Concrete....379
Laid During 1920—A Correction.289
Laid During 1920—Table 155, 176, 266, 308
, Mortar Cushions for Block.....525
Near Culverts, Preventing Cracks in Concrete 326
, Non-Rigid Bases for 111, 348
Permissible, Patented 243
, Reinforcing Concrete 137
To Be Laid in 1921, City.....283
with Lugless Brick, Bituminous Filled Brick 298
Paving Bids Received, More..... 59
for Japan, Bituminous.....411
in American Cities.....232
in Chicago, Street 194
in Goldsboro, Street 118
Materials in Various Counties 458, 505, 534
Program, Chicago's 205
Program, Philadelphia's Big.....417
Pay for Federal Employees, Equitable 411
, The User Should 451
Payment for Sewer Manholes.....105
Pennsylvania Highway Contracts Let 378
Highway Work 457
, Road Traffic Census in 194
Road Work to Begin.....300
Permits and Contracts in 1920, Building 192
Philadelphia Begins Municipal Street Cleaning 77
, Street Cleaning in 410
Philadelphia's Big Paving Program.417
Pile, Loading Test on a Bridge Foundation 411
Piles Be Installed, How Can Concrete Sheet 41
Pipe?, How to Unjoint and Handle Three Miles of Lead-Joint, Small-Size Cast Iron.....197
Mains in Service, How to Move..555
, Modern Cast Iron 75
Welding, Oxyacetylene Torch for.549
Pipes Be Installed, How Can Submerged Water 65
, Service Strength of Sewer.....146
Planning for Kansas City, City..... 95
Plans and Specifications, Indefinite..223
Plant, A Traveling Gravel..... 92
, Columbus to Enlarge Filtration.300
, Financing Sacramento's Filtration 72
for Bergen County, Road Materials Storage 302
in Iowa, Complete Road.....317
, Manhattan Borough Asphalt... 21
, New York Dry Dock Corporation's 163
, New York Harbor Dry Dock Corporation's 141
on Concrete Road Construction, Economical 171
, Skagit River Hydro-Electric....219
Plants, For State-Owned Cement.... 73
, Ineffectively Operated Filtration 479
, Itinerant Concrete Mixing.....297
, Power for Public Utility..... 76
, Pumps for Small Water.....427
, Sand Filters for Small Sewage..275
, War Deterioration of Water....379
Poles, Preservative Treatment of Wood 63
Port Arthur, Drainage in.....172
Arthur, Street Work in.....120
Newark Dredging Started.....554
of New York, Development of the 91
Power for Public Utility Plants..... 76
from Colorado River..... 30
in San Joaquin Valley, Water... 4
, Municipal Development of Hydro-Electric 194
Prices Are High, Why Highway Construction 396
, Recent Highway 397
Problem, Practical Solution of a Highway 324
Process, Present Status of Activated Sludge 356
Profit on Small Jobs, Efficiency Means 376
Program, Philadelphia's Big Paving.417
Properties, Appraisal of Water Works 480
Public Positions, Engineers for.....429
Work to Relieve Unemployment.305
Works Bill, $250,000,000.....471
Works in 1920, Salt Lake City's.174
Works, Labor for 121
Publicity for Public Works.....430
Pump Efficiency, Determination of.. 56
, Repairing Water Works System.277
Pumps at St. Paul, Electrically Driven Centrifugal 71
For Small Water Plants 427
Public Water Supply, Fire Engine 449
Purification, Improvements in Trenton Water 341

Quicksand 98

Railroad Relocation, Costly 273
Rainfall and Runoff, Relations Between 472
Ranger's Water Supply 56
Rates, Finances and Labor, Tabulated Data on 480
—Finances—Labor, Meter Table.481
for Small Minnesota Villages, Water 276
Reclamation Service, Engineers Wanted for 376
Records, Refuse Collection.....375
Reduction, General Wage 408
Uncertainties, Garbage 409
Refuse, Collecting 241
Collection in England 97
Collection Records 375
Collection, Trailers in 235
Collection, Wasteful 219
Disposal in London Boroughs...503
Disposal in Passaic 367
, Disposal of Municipal.....282
Registration Areas, Growth of.....526
Reinforcing Concrete Pavement.....119
Concrete Pavements 137
Relocation, Costly Railroad.....273
Removal, Mechanical Snow.....233
, New York City's Preparations for Snow 95
Repairing Bituminous Macadam by the Cold Patch Method.....538
Repairing Water Works Steam Pump.277
Wood Block Pavement in Newark, N. J. 515
Repairs, Tempe Bridge Substructure.523
Report on California Roads, Federal.324
Reports and What They Should Contain, Water Works 473
Research by Federal Government Threatened, Scientific 8
Reservoir, Large Reinforced Concrete Covered 389
Roof for Recreation 518
, Use of Copper Sulphate in Kansas City 260
Reservoirs, Form Economy for Concrete 395
Restrictions, Excessive Motor Truck Taxation and 549
Revenues in New London, Water....524
Rhode Island Sewerage District, For a 224
Ridgway Honored, Robert 530
Road Bids High.....243
, Bifurcated Concrete 296
Bonds, Texas County 176
Builders Ask Relief, New England 224
Builders' Association, New England 102
Builders' Truck Turntable..... 50
Building and Maintenance, Modern 359
Concreting, Rapid 67
Construction Costs, Distributing.323
Construction, Difficult Swamp... 49
Construction, Economical Plant on Concrete 171
Construction in Ohio 548
Contract, Installation for a $700,000 Concrete 144
, Earthcrete 431
for New York—New Jersey Tunnel 243
, Heavy Work on a New Jersey State 443
Improvement and Drainage—Tables 327
Law, Amending Indiana.....205
Materials, State Manufacture of.137
Plant in Iowa, Complete.....317
Specifications, Indiana Concrete.148
Traffic Census in Pennsylvania..194
with Tractors and Wheel Scrapers, Grading 406
Work, Federal Aid 320
Work in View, No End to.....323
Work in 1920 and 1921—Table 336, 380

382212

Work to Begin, Pennsylvania...300
Roads, A Country Without.....234
, Economy in Designing.....499
, Engineering Costs on Montana.320
, Everlasting 323
, Federal Report on California...324
, Government Aid for British... 30
, Illinois Federal Aid 162
in Argentine Republic, Good....238
in Kansas, Farmers Oppose Good.174
in New Hampshire, Gravel.....448
, Patrol Maintenance for Indiana 208
Receiving Federal Aid, Types of.428
, Reinforced Concrete for Massachusetts 263
, Snow Removal from Country... 60
, Sugar Beet Sap Destroys Concrete 509
, Types of Federal Aid 429
Wider, Making Narrow.....318
Rock Excavation, The Cost of Tunnel 13
, Joseph C. 150
Rope Fastenings, Wire 64
Run-off Data, Importance of.....479
, Relations Between Rainfall and.472
Russian-American Engineering Society, A 102

Salt Lake City's Public Works in 1920 174
Sand Be Graded for Use in a Filter?, How Can a Small Quantity of Fine 244
Be Most Economically Excavated and Loaded in Trucks?, How Can Each 211
in Road Concrete, Coarse.....159
San Francisco Votes Against Purchasing Water Works.....264
Water Works, To Vote on Purchase of 174
San Joaquin Valley, Water Power in
Sap Destroys Concrete Roads, Sugar Beet 509
Save Tree, Creates Park to..... 34
Schools Necessary for the Building Industry, Trade 198
Scrapers, Grading Road with Tractors and Wheel 406
Screen and Imhoff Tanks, Operating Data of Fine 370
Sewage by the Dorr System, Treating 52
Disposal at Worcester, Mass....421
Outfalls, Cleveland's Submerged.188
Plants, Sand Filters for Small...275
Treatment at Lexington....249, 348
Treatment, Notes on English.... 24
Sewer Assessments in Newton.....187
Construction in Kokomo, Ind. ... 89
Injunction, Passaic Valley ..208, 264
Manholes, Payment for 105
, Ocean Avenue Storm.....
Pipes Service Strength of.....146
Tunnel, Linden Street 217, 254
Sewerage, Court Powerless to Compel 405
Designing Improvements in Toledo's 518, 544
District, For a Rhode Island.....224
Sewers, Brooklyn, Avenue U..... 73
in Bronx Borough, New York, Laying Reinforced Concrete...403
, Strength of 149
, Substitutes for 293, 358
, To Keep Oil Out of.....437
, What?, Before 301
Shepperd, Frederick William 179
Shut-Down?, How Can A General Construction Organization Be Utilized During Winter 103
Simplifying Zoning 35
Siphon, Operating a True.....475
Sling, An Automatic Release.....253
Slope with a Slab Lining Having Few Joints, How to Concrete a 2 in 1 287
Sludge Process, Present Status of Activated 356
Snow Fighting in City and Country. 31
from City Streets, Removing... 37
Handling Apparatus 193
Loading in Chicago, Mechanical.165
Removal from Country Roads.....60
Removal in Boston.....174
Removal, Mechanical 233
Removal, New York City's Preparations for 95
Society, A Russian-American Engineering 102
Solution of a Highway Problem, Practical 324
South Carolina Highway Department.335
South Chicago, Concrete Highway Construction in 523
Spans, Constructing Short Highway.395
Specifications, Delaware Highway Designs and 261
for Massachusetts State Highway Work 176
, Improved Highway 301
, Indefinite Plans and 223
, Indiana Concrete Road 148
of the A. S. M. I. Pavement..... 95
, State Highway 348
Springfield, Water Maintenance in...500
Standardization, Council on 552
State Highway Specifications.....348
Road Work in 1920 and 1921....336
State-Owned Cement Plants, For.... 73
Staten Island Tunnel, The.....384
Storage Plant for Bergen County, Road Materials 302
Plants, Serving Concrete Paving Mixers from Central 454
Street Cleaning in Cincinnati.....504
Cleaning in Philadelphia 410
Cleaning in St. Paul 11
Cleaning, Philadelphia Begins Municipal 77
Force, Winter Work for the.....316
Work in Chicago 148
Work in Port Arthur 120
Work in Topeka, 1921 194
Streets and Highway Pavements, City 155
, Removing Snow from City..... 37
Strike Insurance 242
Structures in Giles County, Road Drainage 345
, Masonry 362
St. Louis Filters, Operating the..... 10
Transit System, The 220
St. Paul, Electrically Driven Centrifugal Pumps at 71
, Street Cleaning in 11
Sub-Base Failures, Base and Table..307
Sub-Grade Failures, Base and.....130
Substitutes for Sewers.....293, 358
Substructure Repairs, Tempe Bridge.523
Suit, New York Loses Passaic Valley 430
Superstructure Is Classified as Hand Rail Concrete?, How Much of Bridge 227
Supervision, A Costly Protest Against Inefficient Highway 257
Supply, Buffalo's Improved Water... 59
, Ranger's Water 56
Supported?, How Can Arch Centers Be 531
Surfacing on Lincoln Highway.....225
Swamp Road Construction, Difficult 49
Sweepers, Some Observations and Facts Concerning Motor.....159
Tanks, Operating Date of Fine Screen and Imhoff 370
Taxation and Restrictions, Excessive Motor Truck 549
Taxing Motor Traffic.....551
Technical Papers, Writing for.....207
Test on a Bridge Foundation Pile, Loading 411
Tests Earth Concrete 554
Texas County Road Bonds.....176
Toledo's Garbage Disposal.....263
Sewerage Designing Improvement in 518, 544
Topeka, 1921 Street Work in.....194
Torch for Pipe Welding, Oxyacetylene 594
Truck Taxation and Restrictions, Excessive Motor 549
Tour of Europe, Civic.....256
Tractors and Wheel Scrapers, Grading Road with 406
Traffic Census in Pennsylvania, Road.194
, Highway 237
Justification for Highway Construction 396
, Taxing Motor 551
Trailers in Refuse Collection.....235
Transit, New York City.....279
, Pavement Concrete Injured in.473
System, The St. Louis.....220
Transportation Lines, Alarming Deterioration of New York.....192
, Winter 170
Treating Sewage by the Dorr System 52
Treatment at Lexington, Sewage....348
, Notes on English Sewage..... 24
of Wood Poles, Preservative..... 63
Tree, Creates Park to Save..... 34
Trees, Blasting Down.....288
in California, Highway Shade...187
Trenching in Wet Ground..... 80
Machines, Lowering Water Main with 253
Trenton, N. J., Package Garbage Collection in 428
Water Purification, Improvements in 341
Trolleys, Trackless 455
Tunnel for New York's Water Supply, World's Longest 465, 496
, Linden Street Sewer.....217, 254
Lining, Advantages of Pre-Cast.257
, Pneumatic Concrete Mixer for Jap 452
, Road for New York-New Jersey.243
Rock Excavation, The Cost of... 13
, The Staten Island.....384
Tunneling, Up to Date.....501
Turntable, Road Builders' Truck..... 50
Typhoid in West Virginia, Water-Borne 476

Valves, Inspecting Water Works...242
Viaduct for Bethlehem 30
Villages Water Rates for Small Minnesota 276

Waddell Honored by the Chinese Government, Dr. 348
Receives Norman Medal for Third Time, Dr. 150
Wage Reduction, General 408
Wages, Reducing Construction.....301
Wall, Galveston's Sea 63
Wardwell, F. S. 150
Washington, D. C., Water Improvement for 518
Waste Disposal Report, Baltimore...493
of Water, Municipal 489
Water and Light Notes, Duluth.....276
, Boston Needs More.....198
, Concrete in Sea 374
Department Uses Machinery.....522
Filtration 296
Improvement for Washington, D. C. 518
Main, Break in Lancaster's.....143
Main with Trenching Machine, Lowering 253
Maintenance in Springfield.....500
Meter Maintenance 253
, Municipal Waste of 480
Plants, War Deterioration of....379
Problem, Solving a New Jersey.. 29
Revenues in New London.....524
Supply, Bayonne Desires New...265
Supply, Buffalo's Improved..... 59
Supply, Fire Engine Pumps Public 449
Supply Improvement, Kansas City's 76
Supply, Kansas City 252
Supply, Municipal Partnership in.256
Supply, Ranger's 56
Supply, World's Longest Tunnel for New York's 465, 496
to a Concrete Mixer, Delivering Cement and 509
Works Benefit by Adversity.....525
Works Consumers, Educating...258
Works Convention, American, 52d, 546
Works Intake, Boosting a.....410
Works Met Cost Increases, How.530
Works, Milwaukee 173
Pipe 549
Works Notes in Europe 51
Works Notes, New Bedford.....394
Works Properties, Appraisal of.480
Works Reports and What They Should Contain 473
Works, San Francisco Votes Against Purchasing 264
Works, To Vote on Purchase of San Francisco 174
Works, Valves, Inspecting.....242
Works Wireless 228
Welding, Oxyacetylene Torch for
Well, 50 Feet Deep, Lining a 20-Foot.507
West Virginia, Water-Borne Typhoid in 476
White, Alfred T. 170
Wider, Making Narrow Roads.....318
Winter?, What Disposition Is Best for Construction Equipment During the 82
Wireless, Water Works 228
Wisconsin State Highways.....12
Worcester, Mass., Sewage Disposal at 421
Work Done During 1920 and Contemplated During 1921—Table 398, 412, 432
Federal Aid Road 320
for the Street Force, Winter.....316
in View, No End to Road.....323
in 1920 and 1921, State.....336
on a New Jersey State Road, Heavy 443
Works Booming, Public 409
, Publicity for Public.....430
Writing for Technical Papers.....207

Zones, Changes in New York's Build-
Zones, Changes in New York's Build-
Zoning, Simplifying 35

1921, Here's to 9

LEGAL NEWS

Assessing Paving Costs, City's Power to Connect by Paving the Paved Portions of Streets—Engineering Expenses, Property Included in 438
Assessment and Contract Are Void—Where Competitive Bidders Required to Furnish Their Own Specifications for Paving.....269
, Engineer Properly Empowered to See that Sewer Properly Constructed—Pumping Station for Sewage Subject for Special.363
Not Invalidated by Omitting Railroad not Benefited 84
Purposes Disposal Plant for Portion of City Sewage Held Local, Not Public Improvement for...537
Unenforceable, City's Failure to Follow Statutory Procedure Makes 385
Assessments for Improvements, Principles of 84
for Paving by the Front Foot

Rule 16
Awnings as Encroachments on Sidewalks 178
Barriers Alongside Highway, State and Towns Held Not Negligent in Failing to Erect.....537

Bid by Demand for Return of Check for Deposit, Withdrawal of Invalid, Award of Paving Contract on Incomplete.....269
Bidders Required to Furnish Their Own Specifications for Paving, Assessment and Contract Are Void—Where Competitive.....269
Bills Promptly, Discrimination to Customer by Allowing Failure to Pay 510
Board of Water Works and Light, Status of Municipal 84
Boards of Public Works, Limited Authority of Members of.....289
Bond Does Not Cover Equipment Rented and Not Used, Public Works Contractor's 154
Issue for Purchase of Utility to Voters, Submission of.....306
, Materialmen's Right of Action on Public Works Contractor's.363
Must Be Brought Within Statutory Time, Action on Public Works Contractor's 199
, Officers Personally Liable for Failure to Require Public Works Contractor's 154
, Subcontractor's Rights Under Contractor's 106
to City as to Diligence in Service of Process Thereon Must Be Observed, Provision in 306

Commissioner to Supervise Construction Prohibited by Statute, Employment of Road 269
Compensation to Injured Employees of Uninsured Contractors, Illinois Cities Must Pay 306
Competition by Municipal Lighting Plant 510
Condemnation by Municipality of Land in Another State for Water Works 178
Contract, Contractors Indispensable Parties to Suit to Restrain City from Complying with 460
Let, Effect of Change of Grade After Grading 16
on Incomplete Big Invalid, Award of Paving 269
Rendering It Unenforceable, City's Option to Terminate Construction 16
, Subcontractor's Rights Measured by Voidable 199
, Validity of Sidewalk—Alternative as to Materials..... 44
Contractor for Interest on Bank Deposit, City Held Not Liable to 84
Contractor's Bond Does Not Cover Equipment Rented and Not Used, Public Works 154
Bond, Materialmen's Right of Action on Public Works 363
Bond Must Be Brought Within Statutory Time, Action on Public Works 199
Bond, Officers Personally Liable for Failure to Require Public Works 154
Non-Performance Caused by Delay of Street Railway Company of City, No Liability for.....306
Contributory Negligence in Driving Overhead Bridge 289

Damages for Wrongfully Cutting Off Water 289
, Owner Joining in Petition for Change of Grade Stopped from Claiming 510
Day-Light Saving Ordinance, Validity and Scope of Municipal...385
Dedicated Streets, Proof of Acceptance by Municipality of.....363
Dedication and Acceptance of Street Not Proven, Implied 229
Defect in Street for Jury, Constructive Notice to City Authorities of 385
Delay of Street Railway Company or City, No Liability for Contractor's Non-Performance Caused by 306
Deposit, City Held Not Liable to Contractor for Interest on Bank.. 84
Discrimination to Customer by Allowing Failure to Pay Bills Promptly 510
Disposing Plant for Portion of City Sewage Held Local, Not Public Improvement for Assessment Purposes 537

Eight-Hour Day Law, City Firemen Not Within Public Works....199
Electric Plant Situated Without the Municipality Limits, Exemption from Taxation of Municipality's 460
Employee After Special Employment Ends for the Day, No Liability of City for Injury to Garbage Driver as Special.....306
Transferred to Special Employment, Compensation for Injury to 199
Employees of Uninsured Contractors, Illinois Cities Must Pay Compensation to Injured.....306
Encroachments on Sidewalks, Awnings as 178
Engineer Properly Empowered to See that Sewer Properly Constructed—Pumping Station for Sewage Subject for Special Assessment 363
Engineering Expenses Properly Included in Assessing Paving Costs, City's Power to Connect by Paving the Paved Portions of Streets 438
Equipment Rented and Not Used, Public Works Contractor's Bond Does Not Cover.....154
Excavation Contract Construed, Sub-Contractor's 229
Excess Work Distinguished from Extra Work in Road Contract....178
Execution, Municipally Owned Water Works Not Subject to.....199
Extra Work in Road Contract, Excess Work Distinguished from.178

Firemen Not Within Public Works Eight-Hour Day Law, City...199
Franchise Fixing Rates, Increase of Hydrant Rates Notwithstanding 385

Grade After Grading Contract Let, Effect of Change of..... 16
Stopped from Claiming Damages, Owner Joining in Petition for Change of 510

Highway by Fence, Injunction for Obstruction 178
of Funds, Liability of Subscribers for 106
ity of Subscribers to.....196
Hydrant Rates Notwithstanding Franchise Fixing Rates, Increase of 385
, Water Company Held Liable to Party Injured Under Indiana Statute for Injury by Defective Fire 537

Ice in Streets—Proper Care Required of Pedestrians 438
Icy Sidewalks, Injuries by Defective Spouts Causing—Indemnity Recoverable by City from Property Owner 229
Improve Streets Held Sufficient, Though Irregular, Resolution of Intention to 269
Improvements, Principles of Assessments for 84
Injunction Against Municipality Dismissed, Water Pollution—Petition for 178
of Sale of Property for Sidewalk Tax Refused 44
Injuries by Defective Spouts Causing Icy Sidewalks—Indemnity Recoverable by City from Property Owner 229
Injury on Street—Proximate Cause—Notice of Defective Condition.154
to Employee Transferred to Special Employment, Compensation for 199

Land for Water Works Beyond Five-Mile Limit Invalid Under City Charter, Purchase of 154
Liability of City for Injury to Garbage Driver as Special Employee After Special Employment Ends for the Day, No.....305
Liable to Party Injured Under Indiana Statute for Injury by Defective Fire Hydrant, Water Company Held 537
Liable to Traveler Assuming Risk in Fog, City Not 154
Lighting Plant, Competition by Municipal 510
Limits Powers of Municipalities to Construct Improvements Beyond 44
"Local Improvement," What Is Covered by the Term 385

Materialmen's Right of Action on Public Works Contractor's Bond 363
Materials, Alternative as to Validity of Sidewalk Contract 44
Negligent in Failing to Erect Barriers Alongside Highway, State and Towns Held Not.....537
News Stands as Obstructions in City Streets 106
Notice of Defective Condition, Injury on Street—Proximate Cause...154
to City Authorities of Defect in Street for Jury, Constructive..385
Nuisance by Sewer Held Too Remote to Invalidate Tax Bills, Possible 229

Obstruction of Highway by Fence, Injunction for 178
Officers Elected Under Unconstitutional Charter Provisions Are DeFacto Officers 84
One-Way Street Ordinance for Automobiles Held Valid 154
Overflow of Land Not Approximately Caused by It, City Not Liable for 229
Paving Between Tracks—Compelling Removal of Car Tracks to Center of Street 84
by the Front Foot Rule, Assessments for 16
of Railroad Crossing by Railroads 537
the Paved Portions of Streets, City's Power to Connect by—Engineering Expenses Properly Included in Assessing Paving Costs 438
, What Constitutes an Original.. 16
Pollution—Petition for Injunction Against Municipality Dismissed, Water 178
Power, Order to Director of Public Works to Lay Out Proper Sewer Held Not Unlawful Delegation of 438
Property, Municipality's Power to Sell Disused 106
Public Works, Limited Authority of Members of Board of 289
Pumping Plant, Authority to Maintain Water Works Includes Power to Substitute Electric for Steam 363
Station for Sewage Subject for Special Assessment—Engineer Properly Empowered to See That Sewer Properly Constructed 363

Railroad Crossing, Washington Commission Cannot Deny City's Application for 438
Crossings by a City Within Its Limits, Regulation of.....460
Exclusive Use of a Substantial Part of a Street, Municipality Cannot Give 306
Not Benefitted, Assessment Not Invalidated by Omitting..... 84
Railroad Crossing by Railroads, Paving of 537
Rates Fixed by Ordinance Should Yield Reasonable Return on Investment, Water 510
, Increase of Hydrant Rates Notwithstanding Franchise Fixing.385
Regulation of Municipally Owned Public Utilities 460
Resolution of Intention to Improve Streets Held Sufficient, though Irregular 269
of Intention to Improve Streets Must Be Properly Passed.....229
Return on Investment, Water Rates Fixed by Ordinance Should Yield Reasonable 510
Road Commissioner to Supervise Construction Prohibited by Statute Employment of 269
Sewage Held Local, Not Public Improvement for Assessment Purposes, Disposal Plant for Portion of City 537
Sewage Subject for Special Assessment, Engineer Properly Empowered to See that Sewer Properly Constructed—Pumping Station for 363
Sewer Held Not Unlawful Delegation of Power, Order to Director of Public Works to Lay Out Proper 438
Held Too Remote to Invalidate Tax Bills, Possible Nuisance by.229
Material Held Inadmissible as Improperly Based, Expert Testimony as to the Unfitness of.. 44
Sidewalks, Accumulation of Snow and Ice on 199
Snow and Ice on Sidewalks, Accumulation of 199
Specifications for Paving, Assessment and Contract Are Void Where Competitive Bidders Required to Furnish Their Own.....269
Street, Compelling Removal of Car Tracks to Center of—Paving Between Track 84
, Municipality Cannot Give Railroad Exclusive Use of Substantial Part of a 306

Not Proven, Implied Dedication and Acceptance of 229
Streets, Ice in—Proper Care Required of Pedestrians Must Be Properly Passed, Resolution of Intention to Improve 229
, News Stands as Obstructions in City 106
, Proof of Acceptance by Municipality of Dedicated.....363
Resulting in Private Benefit, Vacation of 16
Subcontractor's Excavation Contract Construed 229
Rights Measured by Voidable Contract 199
Rights Under Contractor's Bond.106
Subscribers to Highway Funds, Liability of 106
Tax Refused, Injunction of Sale of Property for Sidewalk..... 44
Taxation of Municipality's Electric Plant Situated Without the Municipality Limits, Exemption from 460
Tenants in Building, Regulating Supply of Water to.....510
Testimony as to the Unfitness of Sewer Material Held Inadmissible as Improperly Based..... 44
Tracks to Center of Street, Compelling Removal of Car—Paving Between Tracks 84
Traffic, Distinction Between Urban and Interurban Passenger Car.269

Unconstitutional Charter Provisions Are DeFacto Officers, Officers Elected Under 84
Urban and Interurban Passenger Car Traffic, Distinction Between...269
Utilities, Regulation of Municipally Owned Public 460

Vacation of Streets Resulting in Private Benefit 16
Voters, Submission of Bond Issue for Purchase of Utility to 306
Water Company Held Liable to Party Injured Under Indiana Statute for Injury by Defective Fire Hydrant 537
Water, Damages for Wrongfully Cutting Off 289
Does Not Impliedly Warrant Its Wholesomeness, City Owning Waterworks and Furnishing..289
Mains, Extension of 460
Pollution—Petition for Injunction Against Municipality Dismissed. 178
Rates Fixed by Ordinance Should Yield Reasonable Return on Investment 510
to Tenants in Building, Regulating Supply of 510
Works, Condemnation by Municipality of Land in Another State for 178
Works Includes Power to Substitute Electric for Steam Pumping Plant, Authority to Maintain..363
Works Not Subject to Execution, Municipally Owned 199

SOCIETIES

Architectural and Engineering Societies, Minnesota Federation of.310
Asphalt Association 400
Awards, National Board of Jurisdictional 290

Building and Construction Industry, The National Congress of...86, 180
Officials Conference 230

City Planning, National Conference on 489
Civic Federation, The National..... 85
Commerce of the United States, Chamber of 290
Construction Industries, National Federation of 214, 246
Industry The National Congress of Building and 86, 180
Concrete Institute, American.18, 139, 215
Contractors, Associated Pennsylvania Highway 418
Association, Associated General.. 86
, Association of General.....180
of American, Associated General.179
of Massachusetts Highway.....179
to Join Associated General Contractors, Deny 85

Drainage Association, Wisconsin State 270
Congress, Utah Irrigation and...215

Education, Conference on Employment and 18
Employment and Education, Conference on 18

Engineering Board, Minnesota Joint. 46
Council, American.....138, 200, 270, 364, 386
Council Petitions President Harding 246
Dinner to Hoover 440
Institute of Canada 215
Institute of Canada, Cape Breton Branch 179
Societies, The Federated American 338
Societies, Federated American—Executive Board 46
Societies, Minnesota Federation of Architectural and 310
Societies of St. Louis, Associated.105
Society, American Railway 310
Society, Arkansas 170
Society, Detroit 511, 489
Society, Indiana 68
Society, Iowa 85, 156, 200
Society, Iowa—Annual Meeting... 46
Society, Iowa—Holds Successful Meeting 108
Society, Jamestown 200
Society, Kansas 108
Society, Louisiana ..17, 215, 387, 558
Society, Providence 200
Society, Rochester 511, 489
Society, United 200
Society of Wisconsin 279
Society, Wyoming 246
Engineers, Albany Society of Civil..108
, American Association of.17, 45, 105, 214, 230, 290, 310, 338, 364, 440, 461, 538
, American Association of—Idaho Chapter 215
, American Association of—Indianapolis Chapter 310, 215
, American Association of—New York State Assembly 387
, American Association of—Twin City Chapter 433
, American Institute of Electrical.489
, American Society of Civil..107, 290, 364, 400, 461, 511
, American Society of Civil—Buffalo, N. Y. Section.....440
, American Society of Civil—Illinois Section 107
, American Society of Civil—Kansas Section 387
, American Society of Civil—Large Vote for Officers.....139
, American Society of Civil—New York Section 270, 462, 489
, American Society of Civil—San Francisco Section 107, 310
, American Society of Civil—Seattle Section 246
, American Society of Mechanical 85, 139, 387, 418, 400, 511
, American Society of Mechanical—Coming Meetings 46
, American Society of Mechanical—Hartford Section 246
, American Society of Mechanical—Philadelphia Section 107
, American Society of Safety.462, 489
, Automative 107
, Boston Society of Civil, Address to 17
, British Institution of Civil, to Increase Dues and Avoid Deficit 17
Engineers' Club of Baltimore.....180
Club, Brooklyn, 86, 179, 270, 310, 400, 439, 511
Club of Des Moines..... 68
Club, Kentucky 108
Club, Memphis 139
Club of Philadelphia, 86, 108, 310, 511
Club of San Francisco..... 68
Club, St. Paul 156
Club, Topeka 215
Club, Webster City 178
Engineers, Colorado Society of.....200
, Conference of State Sanitary, 461, 538
, Connecticut Society of Civil...179
, Illinois Society of 215
, Manitoba, to Enforce Salary Schedule 18
, Mechanical 156
, Montana Society of 440
, New Jersey County 68
, North Dakota Society of.....290
of Alberta, Professional 387
Society, Minnesota Surveyors and 270
, Society of American Military—The Philadelphia Post..... 17
Society of Pennsylvania 511
, Utah Society of.....108
, Vermont Society of 387
, Western Society of.....68, 462

Highway and Transport Education Conference, Mid-Western 156
Association, Massachusetts 387
Contractors, Associated Pennsylvania 418
Contractors' Association, Kentucky— 139
Council, Federal 364
Officials American Association of State 46
Traffic Association, National.....418
Traffic Regulations, National Conference on 108
Transportation Show 88
Housing in America, Eighth National Conference on 17

Irrigation and Drainage Congress, Utah 215

Municipal League, California.....107

Pine Association, Southern.....387
Purdue University, Seventh Annual Road School 156

Railway Engineering Society, American 310
Research Federation, Personnel.....270
Road Builders Association, American.200
Builders' Association New York State 387
Builders' Association, Texas.....180
Building Contractors' Association, West Virginia 108
Officials, Conference of Iowa....387
School of Purdue University, Seventh Annual 156
Roads Association, New Hampshire Good 387
Association, Virginia Good.....156
Congress and Show, The Eleventh Annual American Good.....138
Convention 440
Convention, Canadian Good 489

Sanitary and Water Supply Association, Indiana 310
Sewage Works Association, New Jersey 215
Standardization Council on 489
Surveyors' and Engineers' Society, Minnesota 270

Traffic Association, National Highway 364, 418, 439
Transport Education Conference, Mid-Western Highway and 156
Water Supply Association, Indiana Sanitary and 310
Water Works Association, American 418, 439
Works Association, American—Illinois and Iowa Sections....387
Works Association, American—New York Section 214
Works Association, New England 45, 68, 139, 200, 538
Works Association, New York Section 290
Works Association, Southwest, 246, 461

NEW APPLIANCES

Ajax—On Highway Construction, Hercules 402
Anthony Dumping Equipment.....490
Arcadia Trailers for Motor Trucks..463
Asphalt Block Press 69
"Asphalt Macadam" Roads, How to Build 232
Asphaltum Products, Conway 272
Austin Meter Pump 181
Model 6 Excavator 109
Motor Sweeper 401
Trenching Machine, A New All-Multipedal 87
Austin-Western Road Machinery.....231
Auto-Sweeper, The 311
Barber-Green Loaders on Pavement Work 420
Snow Loader 109, 491
Bars, Universal 248
Bitoslag Pavement 248
Blaw Forms 490
Block Press, Asphalt 69
Bodies, All-Steel Dump 157
and Hoists, Quality Tanks.....388
for Garbage Collection, Steel....464
, Motor Truck 442
, Truck Hoists and 512
Brown Port-A-Belt, The 490
Bubble-Font, Murdock Anti-Freezing.340
Builder, Oswald Road 539
Bulletin, Pump Governor 311
Bunk, The Fort Pitt Sectional.....181

Car, A New Trailer Dining and Cook.110
Cars and Wheels, Giant Mine.....272
, Conkey 442
, Four-Wheel Drive Motor..... 87
Case Road Building Equipment..... 20
Castings, Municipal 248
Cleveland Air Tools 69
Compressor, Imperial Portable 47
Compressors, Sullivan Air 513
Compressor, Sullivan Portable Mine Car Air 560
Conkey Cars 442
Construction, Hercules Ajax-On Highway 402
Controller, Maximum Demand Water.442
Cox Operating Valve Illustrated..... 87
Crane, A New Crawling Tread.....339
205, P & H Excavator.....513
Cranes, Browing Locomotive.....388
, Crawling Tread Locomotive.....512

, Overland 339
Crusher, Gruendler Stone 311
Curb, Economy Reversible Manhole..232
Cutting Machines, Pipe 339

Dake Engines 441
Dining and Cook Car, A New Trailer.110
Drag, B. B. Reversible Road.....339
Dump Bodies, All-Steel 157
Body, Gammon 291
, One-Ton Truck 158
Dumping Equipment, Anthony.....490
Equipment, Heil 340

Earthcrete 248
Easton Industrial Railways 69, 419
Engineers' Supplies, Civil 247
Engines, Dake 441
Engines for Emergency Pumping, Sterling 540
Equipment, Case Road Building..... 20
, Highway Construction 401
, Koppel Industrial Track and...512
Excavator, Austin Model 6.....109
, Ladder Type Standard.....492
Excavators, Jack of All.....388
Excavator, Wheel Type of P & H....540
Evinrude Unit Centrifugal Pumps...539

Fairfield Car Unloader.....540
Federal Road Building Truck.....292
Feed Machines, Dry Chemical.....231
Fire Department Truck, New.....181
Signals, Worcester 19
Forms, Blaw 490
, Steel Road 271
Fort Pitt Sectional Bunk, The.....181
Four-Wheel Drive Motor Cars..... 87

Garbage Collection, Steel Bodies for..464
Governor Bulletin, Pump.....311
Grading, Duplex Highway 491
Grading, Strenuous Machine 560
Gruendler, Stone Crusher.....311
Guards, Paving 231

Hammers, McKiernan-Terry Steam..201
Hauck Concrete Heaters 47
Heaters, Hauck Concrete 47
Hercules Ajax—On Highway Construction 402
Highway Construction Equipment...401
Construction, Hercules Ajax—On.402
Hoist, Van Dorn Dump Truck Body..291
Hoists and Bodies, Truck 512
, Quality Tanks, Bodies and.....388
Holt Caterpillar Tractors 271
Hug Truck Turntable 271

Incinerator Co., Chicago.....272
Interlock 513

Jack, Automatic Lowering.....491
Joints, Servicised 442

Koppel Industrial Track and Equipment 512

Lackawanna Sheet Piles 491
Lamps, Westinghouse Street 201
Light, Mushroom Traffic.....271
Loader, Barber-Green Snow.....109, 491
for Concrete Highway Work, Stamp Mixer 201
Loaders on Pavement Work, Barber-Green 429
, Specialty 463
Loading, Mechanical Snow 442
Locomotive, American Gasoline.....402

Machine, A New All-Multipedal Austin Trenching 87
, Spalding 2-in-1 Road 109
Machinery, Austin-Western Road....231
, Champion 402
, Excavating and Earth Handling.291
, Stroud Road Making.....401
Machines, Dry Chemical Feed.....231
, Pipe 157
, Pipe Cutting 339
Manhole Curb, Economy Reversible..232
McKiernan-Terry Steam Hammers...201
Mead-Morrison Truck Winches..... 48
Meter 366
Mixers, Giant Concrete 248
Mixer, Smith Non-Tilting 560
Morand Truck Wheels.....442
Motor Cars, Four-Wheel Drive..... 87

Nelson Four-Wheel Drive Tractor....311
Novo Beach Saw Rig.....419

Oswald Road Builder 539

Paints, Solvay 48
Pavement, Bitoslag 248
Pavements at Half the Cost, New....366
Paving Guards 231
Piles, Lackawanna Sheet.....491
Planer, Jones Patent, Kinney Road..157
Port-A-Belt, The Brown 490
Press, Asphalt Block 69
Pump, Austin Meter 181
, Jumbo Trench 513
Pumping Machinery, High Efficiency 19
Outfit, Novo High Pressure.....366
Pumping, Sterling Engines for Emergency 540
Pumps, Evinrude Unit Centrifugal..539
Pumps, Self-Oiling Bulldozer Power.312
, Sullivan 512

Railways, Easton Industrial.....69, 419
Returner, Ash Barrel 272
Road Builder, Oswald.....539
Road Building Equipment, Case..... 20
Construction and Maintenance with White Trucks.....109
Machine, Spalding 2-in-1.....109
Machinery, Austin-Western 231
Maintainer 559
Maker, Martin Perfect 419
Making Machinery, Stroud 401
Road-Razer 514
Road Tools 420
Roads, How to Build "Asphalt Macadam" 232
Roadway, Tarvia Macadam 340
Robinson & Co., Inc. 272
Rogers All Steel Trailers.....463
Rollers, Monarch 271
Root Spring Scrapers 491

Sanitation of Cities, The.....232
Santest 181
Saw Rig, Novo Beach 419
Scrapers, Root Spring 491
Screens, Whip-Tap Sand and Gravel..388
Semi-Trailmobiles, Trailmobiles and..442
Service Box, C. M. B. 340
Servicised Joints 442
Sharpener, Sullivan Drill 539
Smith Non-Tilting Mixer 560
Snow Loader Barber-Green 109, 491
Loading, Mechanical 442
Solvay Paints 48
Spalding 2-in-1 Road Machine.....109
Stamp Mixer Loader for Concrete Highway Work 201
Stroud Road Making Machinery.....401
Sullivan Air Compressors 513
Pumps 512
Sullivan Drill Sharpener 539
Portable Mine Car Air Compressors 560
Supplies, Civil Engineers' 247
Sweeper, Austin Motor 401

Tanks, Bodies and Hoists, Quality..388
Tar Products, Coal 272
Tools, Cleveland Air 69
, Road 420
Track and Equipment, Koppel Industrial 512
Layer Tractor Best 110
Tractor, Best Track Layer 110
, Nelson Four-Wheel Drive 311
, Powerox Industrial 271
Tractors, Holt Caterpillar 271
Trailers for Motor Trucks, Arcadia..463
, Rogers All Steel 463
, Warren Heavy Duty Truck....247
Trailmobiles and Semi-Trailmobiles..442
Trenching Machine, A New All-Multipedal Austin 87
Truck Bodies, Motor 442
Dump, One-Ton 158
, Federal Road Building.....292
, New Fire Department.....181
Trucks, Arcadia Trailers for Motor..463
, Road Construction and Maintenance with White 109
, Tec 463
Turntable, Hug Truck 271

Union Fitts Chronometer Valve..... 87
Unloader, Fairfield Car 540

Utilitor Road Maintainer 559

Valve Illustrated, Cox Operating..... 87
, Union Fitts Chronometer..... 87
Van Dorn Dump Truck Body Hoist...291

Warren Heavy Duty Truck Trailers.247
Water Controller, Maximum Demand.442
Waterproofing, Impervite 157
Waughoists 492
Westinghouse Street Lamps.....201
Wheels, Morand Truck 442
White Trucks, Road Construction and Maintenance with.....109
Winches, Mead-Morrison Truck 48
Worcester Fire Signals 19

AUTHORS

Bassett, Edward M.
"Changes in New York's Building Zones" 92
Brainard, John T.
"Break in Lancaster's Water Main" 143
Brown, Charles Carroll
"The Illinois Experimental Highway" 115, 166

Child, John T.
"Some Observations and Facts Concerning Motor Sweepers"..159

Drandell, John S.
"Making Narrow Roads Wider"..318
Downes, John R.
"Operating Date of Fine Screen and Imhoff Tanks" 379

Ford, George B. and Goodrich, E. P.
"Simplifying Zoning" 35

Gilkison, George F.
"Use of Copper Sulphate in Kansas City Reservoir" 260
Goodrich, E. P. and Ford, George B.
"Simplifying Zoning" 35

Hardenbergh, W. A.
"Sand Filters for Small Sewage Plants" 275
"Street Paving in Goldsboro"....115
"Substitution for Sewers"...293, 358
Harrington, John Lyle
"A Workable Form of Contract".361
Hill, W. B., Jr.
"Grading Road with Tractors and Wheel Scrapers" 406
Hubbard, Prevost
"Non-Rigid Bases for Pavements"111
Howell, William A.
"Repairing a Wood Block Pavement in Newark, N. J."....515

Kane, Walter W.
"Computing Parabolic Curves for Street Grades" 373

Livingston, C. R.
"Bituminous Filled Brick Pavements with Lugless Brick"....293

Macallum, A. F.
"Modern Cast Iron Pipe"..... 75
MacDonald, Thomas H.
"Federal Aid Road Work"....320
McCrory, S. H.
"The Effect of Alkali upon Concrete" 390
McDonnell, R. D.
They Should Contain" 473
They Should Contatin".....473
McEwen, T. C.
"Road Drainage Structures in Giles County" 345

Pollock, Clarence D.
"Improved Heavy Traffic Pavements in Jersey City".....423

Simpson, John
"Liability of Municipality for Nuisance in Garbage Disposal".354

Tay, S. W.
"Outfit for Measuring the Level of Liquids" 478

Wise, Colin R.
"Refuse Disposal in Passaic"....367
Wise, Colin R.

State 46
, Crawling Tread Locomotive.....512